

vations on the bathymetrical limit of reef-forming corals, and on the structure and origin of coral reefs and islands.

About this time appeared Sir John Dalyell's interesting investigations on Scottish zoophytes and the first microscopic researches of Ehrenberg upon living and fossil marine organisms. The microgeologic studies of the latter, pointing out the relation between modern marine deposits and geological formations, added a new interest to the investigation of marine life. In 1837 Mr Alan Stevenson applied the method still in use for ascertaining the direction and velocity of marine under-currents.<sup>1</sup>

The next great advance in marine zoology was the invention of Ball's dredge in 1838. The special features of this dredge were such as to give it at once the first place as a naturalist's appliance, and after the lapse of nearly half a century it remains practically unexcelled.

The great importance of dredging as a means of zoological research was recognised in 1839 by the British Association, which appointed a committee "for researches with the dredge, with a view to the investigation of the marine zoology of Great Britain, the illustration of the geographical distribution of marine animals, and the more accurate determination of the fossils of the Pliocene period under the superintendence of Mr. Gray, Mr. Forbes, Mr. Goodsir, Mr. Patterson, Mr. Thompson of Belfast, Mr. Ball of Dublin, Dr. George Johnston, Mr. Smith of Jordan Hill, and Mr. A. Strickland."<sup>2</sup>

From the number of eminent men on this committee valuable reports were looked for, and not in vain. One alone, Professor Edward Forbes, did more than any of his contemporaries to advance marine zoology. He conducted long and patient investigations into the bathymetrical distribution of life in various seas; and by the fascination of his literary style he invested his reports with an interest that carried the knowledge of his work far beyond the limits usually set to the labours of specialists. Forbes' ideas on many points are no longer entertained; had he lived longer he himself would doubtless have been the first to discover and proclaim the falsity of many of them. "To Forbes is due the credit of having been the first to treat these questions in a broad philosophical sense, and to point out that the only means of acquiring a true knowledge of the *rationale* of the distribution of our present fauna, is to make ourselves acquainted with its history, to connect the present with the past. This is the direction which must be taken by future inquiry. Forbes, as a pioneer in this line of research, was scarcely in a position to appreciate the full value of his work. Every year adds enormously to our stock of data, and every new fact indicates more clearly the brilliant results which are to be obtained by following his methods, and by emulating his enthusiasm and his indefatigable industry."<sup>3</sup>

<sup>1</sup> The Principles and Practice of Canal and River Engineering, by David Stevenson, F.R.S.E., p. 116, 2nd ed. Edinburgh, 1872.

<sup>2</sup> Brit. Assoc. Report, p. 127, 1839; Memoir of Edward Forbes, F.R.S., by Wilson and Geikie, p. 246, 1861.

<sup>3</sup> Depths of the Sea, p. 6, 1874.